Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Manipulation of Streamwise Vortices by Air Injection on Trapezoidal Vane-Type Vortex Generators. GIOVANNI NINO, University of Washington, LUCAS WEBER, Technical University of Berlin, ROBERT BREIDENTHAL, University of Washington — This work investigated the feasibility of manipulating a streamwise vortex position by injecting pressurized air through the leading edge of a trapezoidal vortex generator (VG). The VGs were tested on a miniature wind tunnel. A pressure sensor was mounted on a two-dimensional traverse to gather dynamic pressure cross sections downstream of the vortex generator. From these pressure profiles, the vortex position was measured to determine the influence of the air injection. Supplied air pressure was varied as well as the location of the injection at three different positions along the leading edge. In addition, vortex generators with small round holes as injection ports as well as rectangular slots were investigated. Experimental results showed that injection at different VG leading-edge positions were able to displace the vortex in a controllable way.

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Date submitted: 01 Aug 2019 Electronic form version 1.4